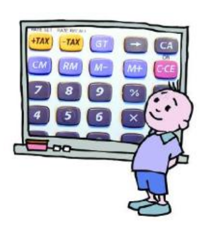
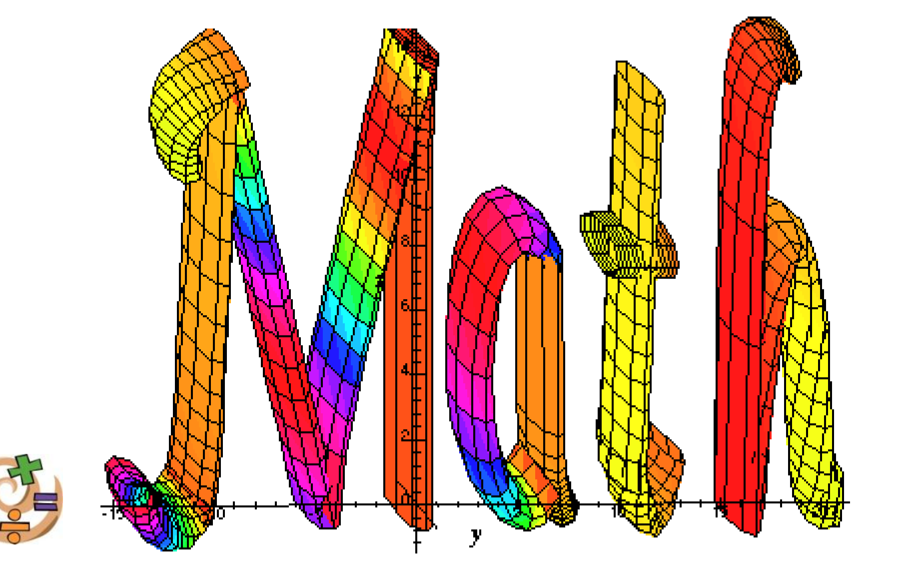








First Term



Primary 5

Name: ....

Class: ....

Revision

✓ **Write the following numbers in the form of decimal numbers (as shown):**

$12\frac{20}{50} = 12\frac{4}{10} = 12.4$

1) $\frac{5}{2}$ = …………..

2) $\frac{55}{50}$ = …………..

3) $\frac{36}{30}$ = …………..

4) $\frac{95}{25}$ = …………..

5) $8\frac{3}{25}$ = …………..

6) $\frac{129}{50}$ = ……………..

7) $\frac{115}{500}$ = ……………..

8) $3\frac{71}{4}$ = ……………..

9) $71\frac{7}{250}$ = ……………..

10) $16\frac{16}{1000}$ = ……………

✓ **Write the following numbers as fraction:**

1) 7.35 = ……………..

2) 12.56 = ……………

3) 6.07 = ……………..

4) 9.003 = ……………

5) 63.23 = ……………..

6) 70.07 = ……………..

7) 24.24 = ………………

8) 367.03 = ……………..

✓ Find the result then approximate it:

1) 32.27 + 13.5 = ………………. ≃ …………….. nearest tenth

2) 18.07 + 421.45 = ………………. ≃ …………….. nearest tenth

3) 854.49 – 32.71 = ………………. ≃ …………….. nearest tenth

4) 743.65 – 512.28 = ………………. ≃ …………….. nearest tenth

5) 326.3 – 306.212 = ………………. ≃ …………….. nearest tenth

6) 2.333 + 5.444 = ………………. ≃ …………….. nearest tenth

7) 354.908 + 412.723 = ………………. ≃ …………… nearest tenth

✓ Complete:

1) 736.5 ≃ 737 it approximated to the nearest ……………………..

2) 2650 ≃ 3000 it approximated to the nearest ……………………..

3) 9237.9 ≃ 9000 it approximated to the nearest ……………………..

4) 4908 ≃ 4900 it approximated to the nearest ……………………..

5) 9553 ≃ 10000 it approximated to the nearest ……………………..

Unit (1)
Fractions

- *Lesson 1: Approximation to the nearest hundredths.*
- *Lesson 2: Comparing and ordering fractions.*
- *Lesson 3: Multiplying by decades 10 , 100 , 1000 , ----*
- *Lesson 4:Dividing by decades 10 , 100 , 1000 , ----*
- *Lesson 5: Multiplying fraction.*
- *Lesson 6: Dividing fractions.*
- *Lesson 7: Multiplying decimal fractions*
- *Lesson 8: Dividing by decimal fractions and by decimal number.*



Lesson 1

Approximation

to the Nearest hundredths

➢ **Remember the place value of each digit of the number:**

Ex:-

The whole number			D. point	The decimal part		
H	Tens	Unit		1st Tenths $\frac{1}{\ }$ = 0.1	2nd Hundredths $\frac{1}{\ }$ = 0.01	3rd Thousandths $\frac{1}{\ }$ = 0.001
3	2	5	.	9	6	1

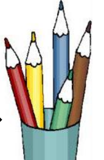
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Rule:

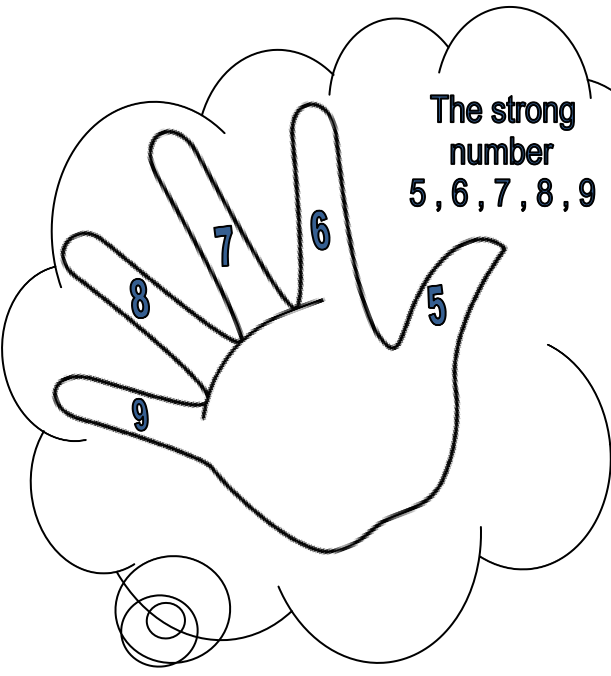
To approximate to the nearest hundredth:

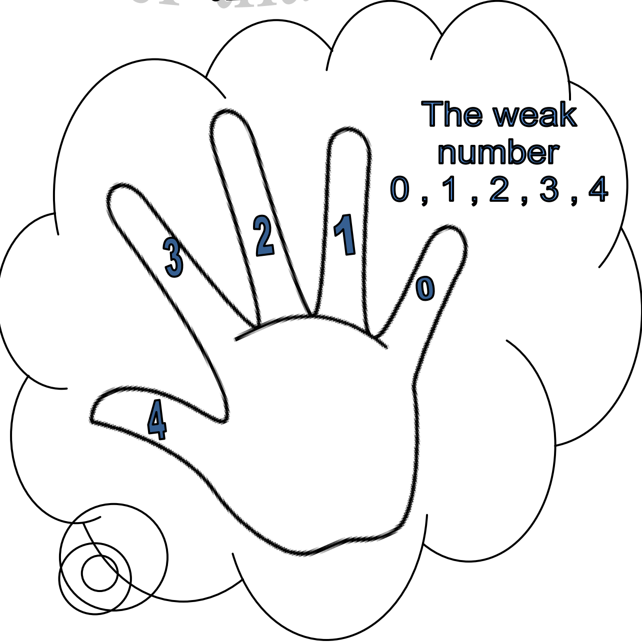
Look at the thousandths digit if it is less than 5: cancel all the digits that right the hundredths digit 5.681 ≈ 5.68

If it is 5 or more: *cancel all the digits that right the hundredths digit (and add one to the hundredths digit)*



Remember that





(1) Approximate the following numbers to the nearest hundredth:

1) 76.514 ≃ ……………..

7) 52.608 ≃ ………………

2) 175.325 ≃ ……………..

8) 69.743 ≃ ……………..

3) $3\ \frac{3}{4}$ ≃ ……………..

9) 0.737 ≃ ……………...

4) $3\ \frac{17}{500}$ ≃ ……………..

10) $3\ \frac{1}{8}$ ≃ ……………

5) 37.4289 – 14.081 ≃ ……………..

11) 4357 ÷ 1000 ≃ ……..

6) $3\ \frac{3}{4}$ - $1\ \frac{3}{200}$ ≃ …………………..

12) 13.376 + 15.75 ≃ ….

(2) Approximate the following numbers to the nearest thousandth:

1) 43.5426 ≃ ………………...
2) 21.84792 ≃ ……………..
3) 6.5297 ≃ ………………..
4) 3.99999 ≃ ………………...
5) 537.2983 ≃ ………………
6) 0.38327 ≃ ………………
7) 2.57819 ≃ ……………....
8) $3\frac{5}{8}$ ≃ ………………..

(3) Complete:

1) The number 4.559 ≃ 4.6 to the nearest …………….
2) $3\frac{3}{4} - 1\frac{3}{200}$ = ………….. ≃ to nearest $\frac{1}{100}$
3) The difference between $\frac{41}{500}$, 0.473 = …… ≃….. to nearest $\frac{1}{10}$
4) 736.592 ≃ 736.59 to the nearest ……………….
5) 82.497 ≃ 82.50 to the nearest ……………….
6) 83.7695 ≃ 83.77 to the nearest ……………….
7) 10.2939 ≃ 10.294 to the nearest ……………….
8) 521.291 ≃ 521.3 to the nearest ……………….

(4) Given that X = 13.452 Y = 7.273:

Find X + Y approximate the result to the nearest 2 decimal places, Estimate the sum of X + Y is your estimation acceptable. Explain.

Solution:

(5) Write the smallest decimal fraction that includes the digits (2 , 5 , 7 , 8) then approximate the number to the nearest hundredth and thousandth

....

....

....

(6) A road extends for 74389 m find its length in kilometer approximating the result to the nearest hundredth.

....

....

....

....

(7) Write three numbers if we approximate them to the nearest hundredth the result will be 52.68

....

....

(8) Write the three numbers if we approximate them to the nearest thousandth the result will be 9.035

....

....

Lesson 2

Comparing and ordering fractions

- **With the same denominator:**

Look at the greater numerator!

$$\frac{6}{7} > \frac{5}{7}$$ → numerator

- **With the same numerator:**

Look at the smaller denominator!

$$\frac{4}{5} > \frac{4}{7}$$ → denominator

- **With different numerator and denominator**:

We have 2 method.

Ex.(1): The scissors way.

$$\frac{3}{4} \quad \frac{5}{6}$$

(18) (20)

18 < 20

$$\frac{3}{4} < \frac{5}{6}$$

Ex.(2): Simplify the bigger fraction if it can.

$$\frac{1}{3} \quad \square \quad \frac{28 \div 4}{12 \div 4}$$

$$\frac{1}{3} < \frac{7}{3}$$

(1) Put (< , > or =):

1) $\frac{3}{8}$ ☐ 1

2) $\frac{3}{8}$ ☐ 0.5

3) $\frac{5}{8}$ ☐ $\frac{3}{8}$

4) $\frac{7}{13}$ ☐ $\frac{5}{13}$

5) $\frac{8}{25}$ ☐ $\frac{8}{13}$

6) $\frac{7}{9}$ ☐ $2\frac{1}{9}$

7) $\frac{4}{5}$ ☐ $\frac{3}{7}$

8) $\frac{7}{8}$ ☐ $\frac{6}{7}$

9) $7\frac{3}{8}$ ☐ $8\frac{3}{4}$

10) $1\frac{3}{4}$ ☐ $\frac{1}{3}$

11) $\frac{3}{5}$ ☐ $\frac{3}{8}$

12) $\frac{3}{5}$ ☐ $\frac{1}{2}$

13) $\frac{3}{5}$ ☐ $\frac{6}{10}$

14) $\frac{3}{4}$ ☐ $\frac{2}{5}$

15) $\frac{7}{12}$ ☐ $\frac{4}{5}$

16) $\frac{7}{9}$ ☐ $\frac{3}{4}$

17) $\frac{3}{5}$ ☐ $\frac{5}{8}$

18) $1\frac{3}{4}$ ☐ $\frac{1}{3}$

19) 0.7 ☐ $\frac{73}{5}$

12) $\frac{2}{2}$ ☐ 1

(2) Arrange the following numbers ascendingly:

1) $\frac{7}{18}$, $\frac{5}{18}$, $\frac{1}{18}$, $\frac{25}{18}$, $\frac{13}{18}$

……………, ……………, …………, ……………, ……………

2) $\frac{13}{7}$, $\frac{5}{7}$, $\frac{9}{7}$, $\frac{4}{7}$, $\frac{11}{7}$

……………, ……………, …………, ……………, ……………

3) $\frac{11}{12}$, $\frac{5}{12}$, $\frac{2}{3}$, $\frac{3}{4}$, $\frac{5}{6}$

……………, ……………, …………, ……………, ……………

(3) Arrange the following fractions descending:

1) $7\frac{1}{6}$, 5.3 , $7\frac{2}{11}$, $5\frac{4}{7}$, 6

....

....

....

....

....

2) 8 , $11\frac{4}{5}$, $12\frac{3}{7}$, $\frac{61}{7}$, 12.4

....

....

....

....

....

....

3) $\frac{12}{15}$, $\frac{12}{7}$, $\frac{12}{17}$, $\frac{12}{13}$, $\frac{12}{5}$

..............., ..., ..., ..., ...

4) $\frac{3}{2}$, $\frac{3}{5}$, $\frac{3}{8}$, $\frac{6}{8}$, $\frac{18}{21}$

....

....

5) $4\frac{5}{8}$, $4\frac{5}{6}$, $5\frac{3}{4}$, $2\frac{3}{4}$

..............., ..., ..., ..., ...

6) $\frac{3}{2}$, $\frac{3}{5}$, $\frac{3}{8}$

....

....

....

7) $\frac{18}{21}$, $\frac{6}{8}$, $\frac{6}{8}$

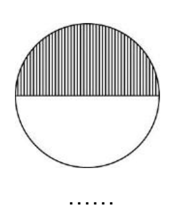
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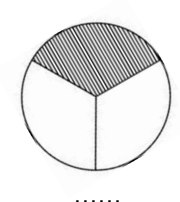
(4) State what the colored section represents in each figure, then rearrange the fractions ascendingly:

1)



$\frac{\dots\dots}{\dots\dots}$

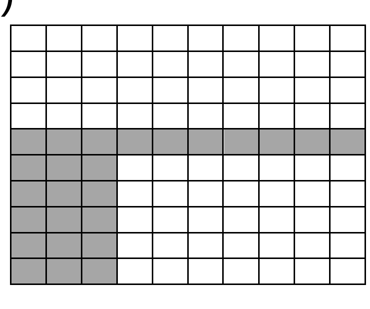
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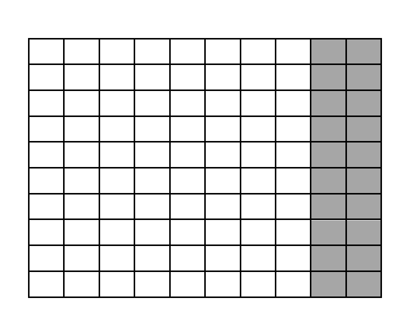
$\frac{\dots\dots}{\dots\dots}$

Ascending Rearrange ....

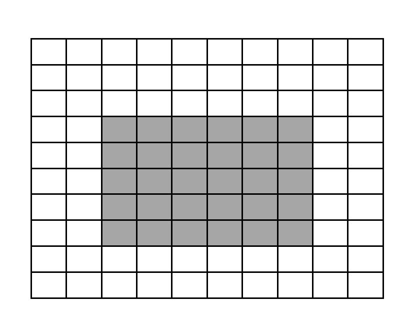
2)



$\frac{\dots\dots}{\dots\dots}$



$\frac{\dots\dots}{\dots\dots}$



$\frac{\dots\dots}{\dots\dots}$

Ascending Rearrange ....

(5) Put (√) or (x):

1) $4376 < 0.407$ ( )

4) $50.61 > 0.501$ ( )

2) $\frac{7}{8} = 0.775$ ( )

5) $3.5 > 3\frac{4}{9}$ ( )

3) $2\frac{7}{9} < 2.7$ ( )

6) $\frac{1}{4} = 0.25$ ( )

(6) Find the values of a , b , and c if:

1) $\frac{2}{5} = \frac{a}{15}$ Then a = ...

2) $\frac{b}{8} = \frac{15}{24}$ ....

3) $\frac{2}{3} = \frac{16}{c}$ ....

Lesson 3

Multiplying by decades 10,100,1000,----

- when we multiplying a decimal number by 10, we move the decimal point one place to the right.

  The number becomes 10 times bigger.

Ex.: 3.75 x 10 = 37.5

because $3.75 = \frac{375}{100}$ and $\frac{375}{100} \times 10 = \frac{375}{10} = 37.5$

- When we multiply a decimal number by 100, we move the decimal point two places to the right.

Ex.: 3.75 x 100 = 375

because $3.75 = \frac{375}{100}$ and $\frac{375}{100} \times 100 = 375$



In multiplying by decades, the decimal point moves to the right according to the number of zeros in 10 , 100 , 1000

Ex.: 3.75 x 1000 = 3750

The decimal point has to move to the right 3 digits because we have 3 zeros, and if we don't have enough digits, we have to put a zero in the place of each digit.

 0.9 x 10000 = 9000

Exercises

Remember

When we **Multiply** we'll move to **Right**

(1) Complete:

1) 3.18 × 10 = ……………………
2) 72.14 × 100 = ………………..
3) 62.819 × 1000 = …………….
4) (72.12 + 2.7) × 10 = …………
5) 35.321 × 10 = ………………..
6) 12.3 × 1000 = ………………..
7) 5.748 × 100 = ………………..
8) 7.32 × 1000 = ………………..
9) (2.35 × 10) – 11.1 = …………
10) (72.12 + 2.7) × 10 = ……………..
11) (32.5 – 13.725) × 10 = ………….
12) (25.671 × 100) – (13.125 × 100) = ……….
13) (8.35 – 2.14) × 100 = ………………………
14) 3.2 × 10 = ……….
15) 9.7 × 100 = ……….
16) 0.341 × 1000 = ……….
17) (8.35 – 2.14) × 100 = ……
18) 27.134 × 100 = ……
19) 3.2172 × 1000 = ……
20) 13.54 × 10 = ……….
21) 13.54 × 10 = ……….

(2) Choose the correct answer from the parentheses:

1) 98.7 × 100 = ……………… (987 – 9870 – 0.987 – 0.0987)
2) 0.067 × 1000 = …………… (6.7 – 67 – 0.067 – 670)
3) 21.3 × 10 = ………………. (2130 – 2.13 – 213 – 0.0213)

(3) Put (< , > or =) in the empty spaces:

1) 4.72 × 10 ☐ 0.472 × 100
2) 3.251 × 100 ☐ 325.1 × 100
3) 72.15 × 10 ☐ 0.07215 × 1000

Lesson 4

Dividing by decades 10, 100, 1000,----

- When we divide a number by 10, we move the decimal point one place to the left.



The number becomes 10 times smaller.



145.75 ÷ 10 = 14.572

because 145.72 = $\frac{14572}{100}$

and $\frac{14572}{100} \div 10 = \frac{14572}{100} \times \frac{1}{10} = \frac{14572}{100}$ = 14.572

- When we divide a number by 100, we move the decimal point two places to the left.



145.72 ÷ 100 = 1.4572

Rule:

Rule:

In dividing by decades, the decimal point moves to the left according to the no. of zeros in 10 , 100 , 1000



145.72 ÷ 1000 = 0.14572

- The decimal point has to move to the left 3 digits because we have 3 zeros, and if we don't have enough digits, we have to put a zero in the place of each digit.

Ex.: 145.72 ÷ 100000 = 0.0014572

Note:

- When we multiply (or divide) by 10, 100, ---- Count the zeros to find out how much bigger (or smaller) your number must be.
- Make sure you move the decimal point in the correct direction.

Ex.: 51.09 x 10 = 510.9

145.7 ÷ 100 = 1.457

because $145.71 = \frac{14572}{100}$

and $\frac{14572}{100} \div 100 = \frac{14572}{100} \times \frac{1}{100} = \frac{14572}{1000} = 1.4572$

Exercises

Remember
When we **Divide** we'll move to **lift**

(1) **Complete:**

1) 64.43 ÷ 10 = ………………….
2) 49.21 ÷ 1000 = ……………….
3) 6.243 ÷ 100 = ………………..
4) 3.56 ÷ ………. = 0.356
5) 31.42 ÷ ………= 0.03142
6) ……… ÷ 1000 = 0.0073
7) 45.256 × …….. = 4525.6
8) 0.051 × …….. = 51
9) ……… × 10 = 25.42
10) 32.57 ÷ 10 = ………..
11) 537.1 ÷ 10 = ………..
12) 659.1 ÷ 1000 = ……….
13) 25.3 ÷ ……. = 0.253
14) ……… ÷ 100 = 0.563
15) ………. ÷ 100 = 0.56
16) 2.63 × …….. = 2630
17) ……… × 1000 = 25.1

(2) Choose the correct answer from the parentheses:

1) 1.7 ÷ 10 = ……………… (17 , 0.17 , 1.7 , 0.017)
2) 75.3 ÷ 100 = ……………. (753 , 7.53 , 7530 , 0.753)
3) 8.76 ÷ 1000 = ………….. (87.6 , 8.76 , 0.00876 , 8760)

(3) Put (< , > or =) in the empty spaces:

1) 4.532 ÷ 10 ☐ 45.32 ÷ 100
2) 3721 ÷ 1000 ☐ 3721 ÷ 100
3) 27.65 ÷ 10 ☐ 27.65 ÷ 10
4) 4034 ÷ 100 ☐ 34.2 ÷ 100
5) 608.3 ÷ 1000 ☐ 608.7 ÷ 10
6) 4.162 × 100 ☐ 4162 ÷ 10

Remember

To convert from big unit to small unit we make times

(4) Complete:

1) 3.002 kgm = ………… gm
2) L.E 728.9 = …………piasters
3) 37.3 dcm = ………… cm
4) 3.6 km = …………… m
5) 65.7 pounds = ……….. piasters
6) 0.235 m = ……….. cm
7) 0.03 kg = ……….. gm
8) 13.0592 kg = ……… m

Remember

To convert from small unit to big unit we make division

(5) Complete:

1) 3237 g = ………… kg
2) 325 m = ……….. km
3) 35.4 m = ………… cm
4) 743 mm = ……….cm
5) 734 cm^3 = ………..L
6) 54 kg = ……….. tons
7) 649.2 gm = ……….. kg
8) 6.12 pt = L.E……….
9) 646.2 gm = ………. kg
10) 825 m = ………. Km

Lesson 5

Multiplying fraction

➢ **Notes:**

1) When we multiply all the sides must be in a fractional form even the mixed – number change it into fraction.

2) Simplify all the fractions together if they are big numbers, then multiply the rest ((the numerators and the denominators)).

➢ **Example:**

a) – x – = —

b) x — = — = 1 — ((notice:4 = —))

c) — x — = – = 1 —
(cancellations: 2, 1)

d) 6 x 2 — = 6 x — = 13

c) — x — x — = – = –
(cancellations: 1, 3, 3, 3, 3)

Exercises

1) Multiply:-

a) $3 \times \frac{2}{5} =$ ....

b) $21 \times \frac{5}{7} =$ ....

c) $20 \times \frac{1}{4} =$ ....

d) $\frac{3}{4} \times \frac{3}{4} \times \frac{8}{9} =$ ....

e) $\frac{4}{5} \times \frac{10}{24} =$ ....

f) $\frac{5}{3} \times \frac{13}{25} =$ ....

g) $2\frac{1}{2} \times 1\frac{1}{3} =$ ....

h) $5\frac{1}{3} \times \frac{9}{8} =$ ....

i) $\frac{14}{27} \times \frac{9}{21} =$ ....

j) $\frac{44}{9} \times \frac{3}{11} =$ ....

k) $9\frac{3}{4} \times \frac{40}{9} =$ ....

l) $\frac{3}{4} \times \frac{4}{3} =$ ....

2) Find the result:

a) $\frac{1}{3} \times \frac{2}{5} =$ ....

b) $\frac{5}{13} \times \frac{13}{25} =$ ....

c) $\frac{2}{3} \times \frac{3}{25} =$ ....

d) $\frac{5}{6} \times \frac{2}{7} \times \frac{21}{35} =$ ....

e) $\frac{1}{3} \times \frac{1}{7} =$ ....

f) $\frac{7}{18} \times \frac{9}{7} \times \frac{6}{15} =$ ....

g) $\frac{3}{4} \times \frac{6}{7} =$ ....

h) $1\frac{5}{7} \times \frac{7}{15} =$ ....

i) $\frac{3}{15} \times 25 =$ ....

j) $\frac{1}{2} \times \frac{2}{3} \times \frac{6}{11} =$ ....

k) $\frac{1}{2} \times \frac{7}{8} =$ ....

l) $\frac{3}{4} \times \frac{3}{4} \times \frac{2}{9} =$ ....

m) $\frac{7}{10} \times \frac{5}{7} =$ ....

n) $7 \times \frac{1}{3} =$ ....

Lesson 6

Dividing fractions

➢ ***Notes:***

1)When we divide: the two sides must be in a fractional form such as the multiplication.

2) Put the first fraction as it is.

3) Change (÷) into (x).

4) Change the second fraction into its reciprocal, then complete as the multiplication.

➢ ***Example:***

1 — ÷ —

— x — [3] = — = 7 —

➢ ***Notice that:***

The reciprocal of a fraction means to change the numerator and the denominator each in the place of the other.

➢ ***Example:-***

— its reciprocal is — , b) 2 — its reciprocal is —

Exercises

1) Write the reciprocal of each of the following:

a) – = …..	b) — = …..	c) 7 – = …..
d) — = …..	e) 1 = …..	f) 6 – = …..
g) – = …..	h) — = …..	i) 1 – = …..

2) Divide:-

a) 12 ÷ – = ...

b) — ÷ – = ...

c) 6 ÷ – = ...

d) 7 ÷ – = ...

e) — ÷ – = ...

f) — ÷ – = ...

g) 42 ÷ – = ...

h) 4 – ÷ – = ...

i) 7 – ÷ 3 – = ...

j) 10 – ÷ 2 — = ...

k) 4 – ÷ – = ...

h) 2 – ÷ — = ...

3) Find the result:-

a) $2 \div \frac{1}{3} =$ ....

b) $6 \div \frac{2}{3} =$ ....

c) $\frac{5}{7} \div \frac{2}{7} =$ ....

d) $\frac{7}{10} \div \frac{9}{10} =$ ....

e) $\frac{2}{3} \div \frac{1}{4} =$ ....

f) $\frac{6}{21} \div \frac{3}{7} =$ ....

g) $1\frac{1}{2} \div 3\frac{3}{4} =$ ....

h) $5\frac{1}{2} \div 3\frac{3}{4} =$ ....

i) $1 \div \frac{7}{8} =$ ....

j) $4\frac{2}{3} \div \frac{2}{3} =$ ....

k) $\frac{3}{4} \div \frac{9}{10} =$ ....

l) $\frac{1}{2} \div \frac{1}{12} =$ ....

m) $\frac{3}{8} \div \frac{3}{4} =$ ....

n) $\frac{3}{4} \div \frac{3}{4} =$ ....

4) Word Problems:-

1) Osama bought – kg of butter for L.E. 8 per kilogram. How much money did he pay?

....

2) The price of 3 – kg of meat is 56 – pounds. Find the price of each kg?

....

3) A lion in the zoo eat 3 – kg of meat each day, How many days does the lion need to eats 21 kg?

....

4) A box contains 45 marbles, if – of them are red, Find the number of red marbles?

....

....

5) Mona saved L.E. 17 – in 7 days. How much did she save in each day?

....

....

Lesson 7

Multiplying decimals

➢ ***First:*** Multiplying a decimal by a whole number

EX.:

0.132 x 32

$$\begin{array}{r} 132 \\ \times\ 32 \\ \hline 264 \\ +\ 3960 \\ \hline 4224 \end{array}$$

- Ignore the decimal point.
- Multiply 132 x 32 =4224
- Count the digits to the right of the decimal point. (3digit).
- Put the decimal point after 3 digits from the right in the result.

$\therefore$ **0.132 x 32 = 4.224**

HOW COMES??

$$0.132 = \frac{132}{1000}$$

$\therefore$ **0.132 x 32**

$$\frac{132}{1000} \times 32 = \frac{4224}{1000} = 4.224$$

Exercises

Keep The Zero in Tens

1) Find the result:

a) 546 x 0.1 = …………..

b) 2345 x 0.001 = ……………

c) 208 x 0.003 = ………..

d) 295 x 0.4 = ………………..

e) 17.49 x 4 = …………..

f) 6148.2 x 7 = ………………

g) 8.12 x 10 = …………..

h) 495.013 x 100 = …………..

i) 0.251 x 9 = ……………

j) 2.51 x 9 = ……………………

Solution:

2) Find:

Keep The Zero in Tens

a.
```
  0.215
x     9
--------
 ……..
```

b.
```
  13.25
x    28
--------
 ………
```

c.
```
  3154
x 0.01
--------
 ………
```

d.
```
   512
x 1.35
--------
 ………..
```

e.
```
   550
x 1.48
--------
 ………..
```

f.
```
   708
x 4.33
--------
 ……….
```

g.
```
  32.6
x    7
--------
 ………..
```

h.
```
  0.0326
x      7
--------
 ………..
```

i.
```
   37
x 5.2
--------
 ……….
```

➢ **Second:** Multiplying a decimal by another:

EX.:

41.5 x 2.34

```
  415
× 234
 1660
12450
83000
97110
```

- Ignore the decimal point.
- Multiply 415 x 234 = 97110
- Count the digits to the right of the decimal points in both numbers and add them. **1 ÷ 2 = 3 digits**
- Put the decimal point after 3 digits from the right in the result.

$$\therefore 41.5 \times 2.34 = 97.110$$

HOW COMES??

$$41.5 = \frac{415}{10} \quad , \quad 2.34 = \frac{234}{100}$$

$$\therefore \frac{415}{10} \times \frac{234}{100} = \frac{97110}{1000} = 97.110$$

You can check:

41.5 ⟶ the point after 1 digit

2.34 ⟶ the point after 2 digits

Then 1 + 2 = 3

So in the answer the point after 3 digits

Exercises

1) Find:

a) 6.42 x 0.57 = …………..

b) 19.32 x 1.22 = …………

c) 1.154 x 0.9 = …………...

d) 203.9 x 0.32 = …………

Solution:

2) Find:

a) (5.7 x 3.2) – 6.24 = …………

b) (0.3 + 0.4) x 0.7 = …………

c) (1.345 – 0.59) x 3.14 = ………

d) 13.84 x (64 – 59.74) = ………

Solution:

3) Compare the products of the following by putting <, >, =:

a) 7.3 x 0.28 ☐ 0.73 x 2.8

b) 0.342 x 1.28 ☐ 3.42 x 0.12

c) 172 x 0.003 ☐ 0.172 x 0.3

d) 12.35 x 2.5 ☐ 12.35 x 0.25

e) 48.2 x 3.7 ☐ 4.82 x 37

f) 4.2 x 1.53 ☐ 4.2 x 15.3

g) 0.206 x 1.6 ☐ 2.06 x 0.3 x 0.5

Solution:

4) Estimate the products of the following operations then compare your estimation of the actual result:

a) 5.3 x 2.7

actual result	estimated result
…………………………………………	…………………………………………
…………………………………………	…………………………………………
…………………………………………	…………………………………………
…………………………………………	…………………………………………
…………………………………………	…………………………………………

b) 18.8 x 7.1

actual result	estimated result
…………………………………………	…………………………………………
…………………………………………	…………………………………………
…………………………………………	…………………………………………
…………………………………………	…………………………………………
…………………………………………	…………………………………………

c) 7.82 x 4.3

actual result	estimated result
…………………………………………	…………………………………………
…………………………………………	…………………………………………
…………………………………………	…………………………………………
…………………………………………	…………………………………………
…………………………………………	…………………………………………

d) 5.89 x 6.1

actual result	estimated result
....	....
....	....
....	....
....	....
....	....

e) 28.7 x 3.1

actual result	estimated result
....	....
....	....
....	....
....	....
....	....

f) 3.9 x 0.704

actual result	estimated result
....	....
....	....
....	....
....	....
....	....

Lesson 8

Dividing by 2 and 3- digit number

1) Finite and infinite division (and the quotient is a whole number):-

Ex: a) 56 ÷ 7 = 8

b) 322 ÷23 = 14

```
        014
   23 | 322
      - 23
        92
      - 92
   r  = 00
```

So: dividend = quotient x divisor

∴ 322 = 14 x 23

---

2) Infinite division : which is with reminder:

Ex :- 340 ÷13 =26 and r =2

```
        026
   13 | 340
      - 26
        80
      - 78
   r  = 2
```

So: dividend = (quotient x divisor) + remainder

340 = (26 x 13) + 2

∴ 340 = 338 + 2

Exercises

1) Find the quotient of the following:

a) 11664 ÷ 216 = …………..

b) 19708 ÷ 379 = …………..

c) 37440 ÷ 234 = …………..

d) 15345 ÷ 165 = …………..

e) 62160 ÷ 296 = …………..

f) 11183 ÷ 211 = …………..

g) 121402 ÷ 202 = …………..

h) 33748 ÷ 143 = …………..

Solution:

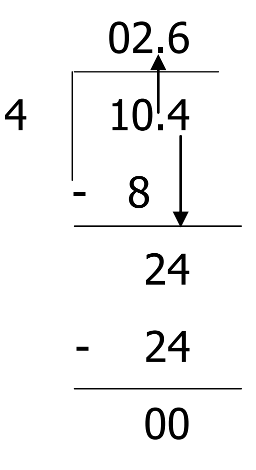
Dividing decimals

➢ First: Dividing a decimal by a whole number:

When we divide decimal by a whole number we do the division operation as usual and put the decimal point in its order in the quotient.

Example:-

10.4 ÷ 4 = 2.6



Exercises

1) Find:

a) 4.8 ÷ 4 = …………

b) 9.8 ÷ 7 = …………

c) 20.4 ÷ 3 = …………

d) 1177.2 ÷ 36 = …………

---

2) Using that 2896 ÷ 362 deduce the following results:

a) 28.96 ÷ 8 = …………

b) 289.6 ÷ 8 = …………

c) 2.896 ÷ 8 = …………

d) 28960 ÷ 8 = …………

➢ Second: Dividing by decimal or numeral decimal:-

To divide by a decimal or numeral decimal we should change it into a whole number by multiplying the two terms of the division by 10, 100, 1000 …………

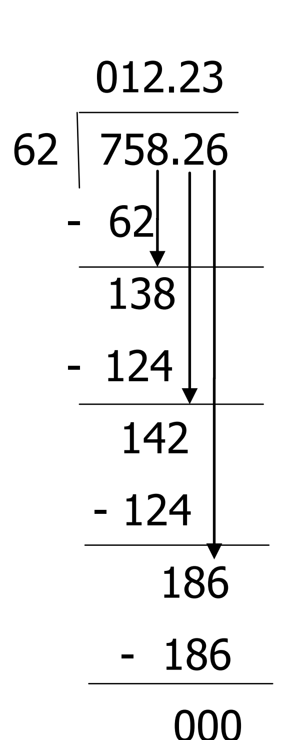
According to the place of the decimal point in the divisor then do the division operation as usual.

Example:

75.826 ÷ 6.2 (1place) .. x 10

758.26 ÷ 62 = 12.23





6.2 the decimal point after

75.826 the decimal point after

Then 3 – 1 = 2

So in the quotient the decimal point after 2

3) Find :

a) 31926 ÷ 225 to the nearest tenth.

b) 43932 ÷ 456 to the nearest hundredth.

c) 167752 ÷ 456 to the nearest unit.

d) 10773 ÷ 66 to the nearest $\frac{1}{1000}$

Solution:

Exercises

1) Find the quotient of the following:

a) 0.416 ÷ 0.8 = ……………...

b) 0.0874 ÷ 0.46 = …………..

c) 1.155 ÷ 0.35 = …………..

d) 36.18 ÷ 0.09 = ……………..

e) 357 ÷ 0.7 = ……………...

f) 0.7595 ÷ 0.31 = …………..

Solution:

2) Find the quotient of the following:

a) 98.4 ÷ 8.2 = ……………….. b) 4.794 ÷ 1.7 = ………………

c) 18.45 ÷ 4.5 = ……………. d) 185.6 ÷ 12.8 = ……………..

e) 2.16 ÷ 7.2 = ……………….. f) 4.2 ÷ 0.06 = ………………..

g) 4.6 ÷ 1.25 = ……………….. h) 8.96 ÷ 3.2 = ………………..

Solution:

3) Find the quotient of the following:

a) (92.36 – 63.25) ÷ 0.41

b) (19.645 – 4.73) ÷ 0.38

c) (42.566 – 25.36) ÷ 0.7

d) (50.84 – 6.2) + 18.2

Solution:

4) Find number:

a) When multiplied by 0.64 then the result is 075.52

b) If divided by 249 the quotient is 12

Solution:

....

....

....

....

....

....

....

....

....

....

5) Which of the following relation is true and which is false? What do you conclude.

a) 3.6 × 1.3 = 1.3 = 3.6

b) 0.8 ÷ 0.04 = 0.04 ÷ 0.8

Solution:

....

....

....

....

....

....

6) Find the quotient of the following:

a) 2.67 ÷ 1.7 = ………..…....   b) 0.171 ÷ 1.9 = ……….………..

c) 65.7 ÷ 6.57 = ……..……..   d) 7.452 ÷ 621 = ……………..…..

e) 38.64 ÷ 8.4 = ……………...   f) 21.528 ÷ 93.6 = ……….………

Solution:

7) Find the quotient of the following:

a) (25.42 – 3.1) + 1.8

b) 3.62 – (55.25 ÷ 32.5)

c) 94.5 ÷ 3.5

d) 2.64 ÷ 0.2

e) (5.3 × 11.2) ÷ 2.1

f) (20.9 ÷ 7.1) × 5.2

Solution:

The infinite division

- Write $\frac{5}{6}$ in a decimal form to the nearest tenth.

Sol:

- The steps:

1- Make a usual division

6 ⟌ 5

But you can't diviside 5 ÷ 6 ⟶

So you put decimal point

$$6 \overline{)5.00}$$

Then he need nearest tenth

So you put 2 zero

Then make a usual division

Then 5.6 = 0.83 ≃ 0.8

$$\begin{array}{r|l} & 0.83 \\ \hline 6 & 5.00 \\ & 4.8 \\ \hline & 020 \\ & 18 \\ \hline & 02 \end{array}$$

Not

IF NEED NEAREST TENTH SO YOU PUT 2 ZERO

If need nearest Hundredth So you put 3 zero

If need nearest Thousandth So you put 4 zero

➢ ***Convert the following to the decimal form:***

a) $\frac{3}{4}$ b) $\frac{1}{8}$ c) $\frac{7}{40}$ d) $\frac{4}{25}$

e) $\frac{7}{3}$ ≃ .... To the nearest $\frac{1}{10}$

f) $\frac{3}{11}$ ≃ .... To the nearest $\frac{1}{100}$

g) $\frac{5}{9}$ ≃ .... To the nearest $\frac{1}{100}$

h) $\frac{9}{7}$ ≃ .... To the nearest $\frac{1}{10}$

General Exercises

i) $\frac{2}{3} \simeq$ .... To the nearest $\frac{1}{100}$

Solution:

Remember

If the two number **Far** make ÷

If the two number near change the singn ÷ → ×

× → ÷

1) Complete:

a) 4.25 ÷ .... = $8 \frac{1}{2}$

b) .... ÷ 9 = 4.5

c) 0.006 ÷ .... = 0.3

d) ………… ÷ 12.5 = 25.1

e) ………… × 6.4 = 205.696

f) 31.78 × …………... = 3.5

Solution:

2) Find the quotient of the following:

a) $9.568 \div 9\frac{1}{5}$ = ……………...

b) $2\frac{1}{8} \div 0.125$ = ……………

c) $2\frac{3}{25} \div 0.012$ = ……..……..

d) $\frac{17}{40} \div 0.85$ = ……………..…..

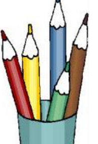
Solution:

3) *Find the result and approximate them to the nearest hundredth:*

a) 7.034 ÷ 1.7 = ……………..……   b) 1.775 × 0.15 = …………..…

c) (3.425+ 1.07) ÷ 2.8 = ……   d) 7.52 ÷ (14.73 – 11.58) = ……

Solution:



4) *Find the result and approximate them to the nearest hundredth:*

a) 53.27 ÷ 2.1 = ……………… b) 24.31 ÷ 9.07 = ………………

c) 1.623 ÷ 0.152 = …………… d) 12.46 ÷ 0.517 = ……………

Solution:

5) *Which is greater $\frac{9}{16}$ or 0.5734?*

Find the difference between the two fractions:

Solution:

……………………………………………………………………………………………

……………………………………………………………………………………………

……………………………………………………………………………………………

……………………………………………………………………………………………

6) Find a number that if multiplied by 0.37 then the result is 17.8932

Solution:

....

....

7) Find the quotient of 458.62 ÷ 35.2 to the nearest hundredth.

Solution:

....

8) Divide 375 by 0.5 then add $5\frac{1}{4}$ to the quotient.

Solution:

....

....

....

....

....

....

9) The area of a rectangle is 10.25 square meter and its length is 4.1 meters. Find its width and perimeter.

10) The side length of a square is 5.06 meter. Find its area approximating it to the nearest hundredth.

11) The length of a rectangle is 25.4 cm while its width is 18.09 cm. Find its perimeter and its area.

Solution:

The story problems

1) The price of a bar of chocolate is L.E. 2.75.

What is the cost of 15 bars of the same kind?

....

....

2) Ahmed bought 12 cans of juice. The price of each can was L.E. 1.75

What is the total cost of the juice? How much would the seller pay back to Ahmed if he paid him L.E. 30?

....

....

....

3) Salwa bought a piece of cloth with 3.75m in length. If the price of one meter was L.E. 33.75

Find the cost of cloth approximating it to the nearest pound.

....

....

....

4) If the price of one meter of cloth is L.E 6.45.

What is the cost of 2.4 meter of cloth?

....

....

....

5) A bundle of paper has a height of 4.5 cm. if all its papers were of equal thickness. Where the thickness of each paper was 0.090 millimeters, Find how many papers does the bundle include?

....

....

....

....

6) The result of multiplying 2 numbers is 9088.

If one of them is 284, find the other number.

....

....

7) An owner of packing food factories wanted to pack 5904 kilograms of sugar equally in 492 packs. What is the weight of each pack?

....

....

8) A car covers equal distances is equal times.

How many kilometers does it cover in 2 hours and 15 minutes if its speed is 73.25 kilometers per hour?

....

....

....

....

....

9) A truck can hold 125 boxes of oranges at a time.

How many times are needed to deliver 4375 boxes by that truck?

....

....

....

....

....

10) The length of a roll of cloth is 53.55 meters. It was divided into equal parts where the length of each part is 3.15 meters.

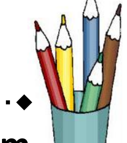
Find the number of these parts.

....

....

....





Unit (2)
The Set

- *Lesson 1: What is a set?*
- *Lesson 2: Mathematical expression of a set.*
- *Lesson 3: Types of set.*
- *Lesson 4: Equal sets.*
- *Lesson 5: Belonging of an element to a set.*
- *Lesson 6: inclusion and subsets.*
- *Lesson 7: Intersection of two sets.*
- *Lesson 8: Union of two set.*
- *Lesson9: The universal set.*
- *Lesson 10: The complement of a set.*
- *Lesson 11: The difference two sets.*

Lesson 1

What is a set?

➢ **A set means a well – defined collection of objects.**

The set like:

1- The days of week – Saturday , Sunday, Monday, Tuesday, Wednesday, Thursday , Friday.

2- The letters of word "Sunday" S , u , n , d , a , y.

3- The even number: 0 , 2 , 4 , ……………

But The Beautiful flowers
And The Beautiful songs. } Isn't set

➢ ***Which of the following is a set and which isn't set:***

a) The months of the Hegra calendar.

b) The tall students in your class.

c) The seasons of the year.

d) The letters of the word "Egypt".

e) The beautiful stories.

f) The prime numbers between 5 and 25.

g) The digits of number 2013.

h) Subjects that you study this year.

i) The nice films on T.V.

j) The nice fruits.

k) The even numbers.

➢ Write the element for each set:

a) Geometric figures.

b) Days of week.

c) Digits of the number 56058

d) Letters of the word "Math".

e) Months of the year.

f) The set of the colors in Egypt's flag.

g) The set of months in the Hegri year.

h) The set of prime numbers less than 20

Solution:

a) ....

b) ....

c) ....

d) ....

e) ....

f) ....

g) ....

h) ....

Lesson 2

Mathematical expression of a set

1) The listing method:

1- You write all the elements of a set between two braces {… … … …}

2- Put " , " between every two elements.

Example: The set of the digits of the number 2452 its elements one 2 , 4 , 5
So it is written as {2 , 4 , 5}

Note:

- The order of the elements isn't important.
- You shouldn't repeat the element inside the set.

2) The description method:

In this method we define the property of element.

Example: X = {**a** : **a** is one of the digits forming the number 179}

It is read as [the set of all **a** where **a** is one of the digits forming the number 179]

➢ ***Express each of the following sets by the listing method:***

1) A = the set of letters of the word "Amira"

……………………………………………………………………………………………

2) B = the set of digits of the number 5656

……………………………………………………………………………………………

3) C = the set of the days of the week.

……………………………………………………………………………………………

4) D = the set of factors of the number 16

……………………………………………………………………………………………

➢ Express each of the following sets by the description method:

1) { r}

……………………………………………………………………………………………

2) { south}

……………………………………………………………………………………………

3) { Ali}

……………………………………………………………………………………………

4) { }

……………………………………………………………………………………………

➢ Express each of the sets by the listing method:

1) The set of the letters forming the word car.

……………………………………………………………………………………………

2) The set of colours forming Egypt's flag.

……………………………………………………………………………………………

3) The set of the digits of the number 4621

……………………………………………………………………………………………

4) The set of the main directions

……………………………………………………………………………………………

➢ Express each of the following sets by the listing method:

1) A = { □ ○ ▭}

……………………………………………………………………………………………

2) B = { t }

……………………………………………………………………………………………

3) X = { }

……………………………………………………………………………………………

4) Y = { }

……………………………………………………………………………………………

5) Z = { }

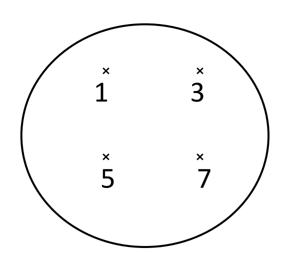
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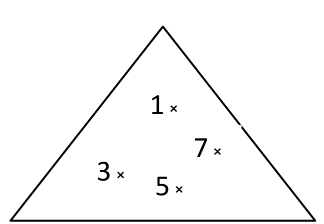
3) The Venn diagram:

1- Draw a closed shape like a circle, a square ……….. then

2- Placing the element in the closed curve.

Example: Represent the set X = {1 7} by using a Venn diagram.





➢ ***Represent the set by Venn diagram:***

1) X = { 8}

2) Z = { "}

3) A = { r}

Solution:

1)	2)	3)

➢ Represent the set by Venn diagram:

1) A = $\{1 , 2 , 3\}$
2) B = the set of letters of the word girl.
3) X = $\{2 , 4 , 4 , 6 , 7 , 9\}$
4) Y = the set of factors of number 16
5) Z = $\{5 , 3 , 2 , 9\}$
6) M = $\{7 , 19 , 15 , 3 , 5\}$

Solution:

1)	2)	3)
4)	5)	6)

Lesson 3

Types of sets

1- Null set or empty set and denoted by the symbol ∅ or { }

2- Finite set which is limited {4,6}

3- Infinite set can not count its element.



The set of odd no. {1,3,5,7,……………… }

The set of even no.{2,4,6,………………..}

EXERCISE

➢ ***Write by using braces the set of common element :***

[If the set is empty ,write ∅]

a) {1,3,5,7,9,11} , {1,2,3,4,5,6,7,and 8}

b) {2,3,4,5,6} {even number less than 10}.

c) {1,4,9,17}, {prime number less than 10}

➢ ***Put (√) in front of what is suitable for each of the following sets:***

	The set	Finite	Infinite	Empty
a	{0,3,6, 9 , 12}	………	………	………
b	{l , m , z , u }	………	………	………
c	{30,32,34,….}	………	………	………
d	{1,3,5,6,…., 99}	………	………	………
e	The set of books in your school library	………	………	………
f	The set of dinosaurs in the zoo	………	………	………
g	The set of people living in Egypt	………	………	………
h	The set of cats with three heads	………	………	………
i	The set of pupils in your school.	………	………	………
j	The set of letters used in writing this book	………	………	………

Lesson 4

Equal Sets

The set X = The set Y
If they have the same elements

➢ ***Complete:***

a) {a , 7} = {7 , 2} then a = ……………………..

b) {5 , a , 8} = {b , 9 , 8} then a = ………………………..

and b = ………………………..

c) {3 , 6 , a} = {6 , 3 , 4} then a = ………………………..

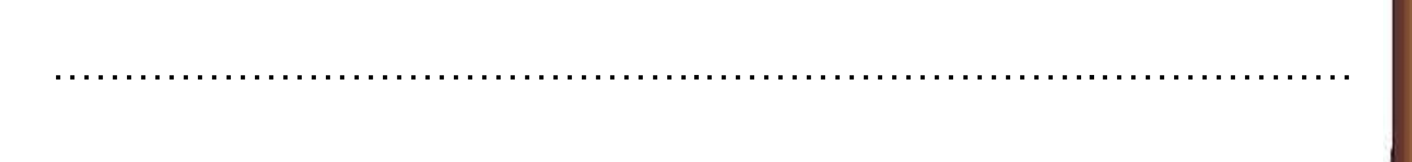
and b = ………………………..

➢ ***Express using the listing method to answer the following question:***

A = The set of the digits of the number 334456

B = The set of the digits of the number 3465

Is the set A equal to set B?



………………………………………………………………………………………

………………………………………………………………………………………

Lesson 5

Belonging of an element to a set

We use ∈ or ∉

→ This called belong

Its denotes the element in the set.

∉ → This called don't belong

Its denotes the element isn't the set.



- **If X is a set where X = {2 , 3 , 5 , 6} Complete by using ∉ or ∈:**

3 …………… X	23 ……………. X
7 …………… X	50 ……………. X
0 …………… X	2 ……………. X
1 …………… X	56 ……………. X

- **If A = {0 , 2 , 4 , 6 , 8} and B = {1 , 3 , 5 , 7 , 9}**

1 …………… A	8 ……………. B
13…………… A	7 ……………. B
9 …………… A	10……………. B
7 …………… A	17……………. B
0 …………… A	9 ……………. B

Lesson 6

Inclusion and subsets

We use $\subset$ or $\not\subset$

$\subset$ ⟶ This called subset

and denotes the set is inclusion or inside the another set.

$\not\subset$ ⟶ This called don't subset

Its denotes the set non inclusion of another set.

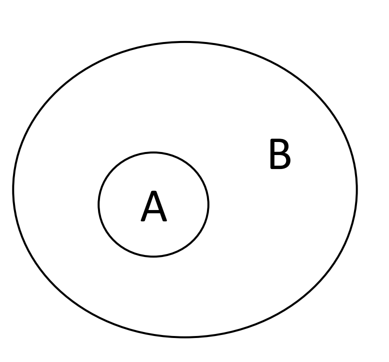


The set of your class is subset of school

A= {1,2,3} , B= {1,2,3,4,5}

ACB ⟶ A is subset of B

So:



1 $\in$ A and 1 $\in$ B

2 $\in$ A and 2 $\in$ B

3 $\in$ A and 3 $\in$ B

So every element in A is belong to B



1- $\emptyset$ is subset from any set.

2- The set is subset from it self.

3- If A = B then ACB , BCA

➢ Look at the opposite Venn diagram then complete:

X = ………………………………………

Y = ………………………………………

a) { 5 } ……………… X
b) Y ……………… X
c) X ……………… X
d) 2 ……………… X
e) Ø ……………… X
f) Y ………… X
g) 6 ………… Y
h) 6 ……………… X
i) {8 , 4}…………… Y
j) Ø ……………… Y

Remember: Ø Is subset from any set

➢ Complete by using ∈ , ∉ , ⊂ , ⊄:

a) {2 , 3} ………{1 , 2 , 3}
b) {789} ………{7 , 8 , 9}
c) Ø ……… {2 , 3}
d) {1 , 3} ………{odd numbers}
e) {2 , 3} ………{2 , 4 , 6}
f) {2} ……… {2}
g) The letters of "Ragb" ……… The letters of "Gabr"
h) 40 ……… {40 , 50}
i) {0} ………{2000}
j) {2 , 3} ………{1 , 2 , 3}
k) Ø ……… {Ø }
l) {9} ………{1, 3, 5 , ………..}
m) 2 ………{ 2 }

➢ Find the subsets for each of each of the following sets:

Remember Ø Is ⊂ any set and Any set is ⊂ it self

a) {8} ……………………………………………………………………
b) {Ø} ……………………………………………………………………
c) {3 , 5 , 9} ……………………………………………………………
d) {99} ……………………………………………………………………

➢ Find the value of X in each one:

a) {X} ⊂ {5} X = …….
b) {2} ⊄ {5 , X} X = ……
c) {X , 6} ⊂ {5 , 6} X = ……
d) {1 , 3 , 7} ⊂ {1 , 3 , 7} X = ……
e) {2 , 3} ⊂ {X , 3 , 9} X =…….
f) {16 , X} ⊂ {17 , 15 , 16} X = ……
g) {0} ⊂ {4 , X , 6} X = ……
h) X ∈ {5 , 6} X = ……

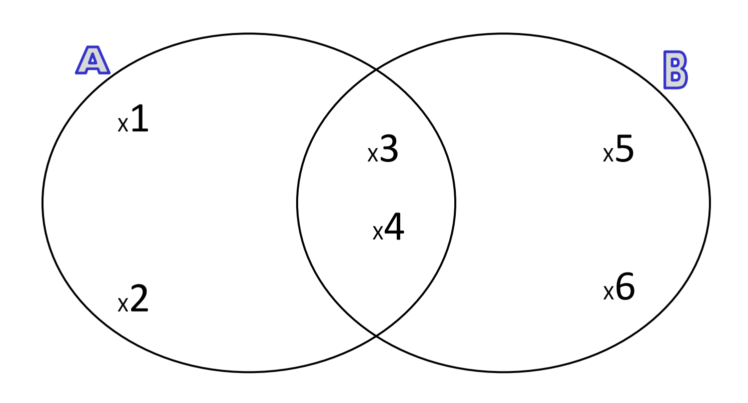
Lesson 7

Intersection of two sets

If $A = \{1, 2, 3, 4\}$ $B = \{3, 4, 5, 6\}$

$3 \in A$ and $3 \in B$

$4 \in A$ and $4 \in B$



So:

$\{3, 4\} \subset$ A and B

This meaning $A \cap B = \{3, 4\}$

The intersect $\cap$ like Sad Face ☹

Note:

$X \cap Y = Y \cap X$

If $X \subset Y$ ➡ $X \cap Y = X$ ➡

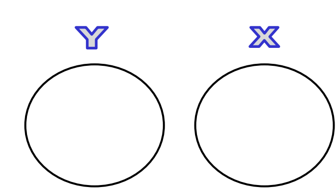
If $A = B$ ➡ $A \cap B = A = B$ ➡

$\cap A = A \cap \emptyset =$

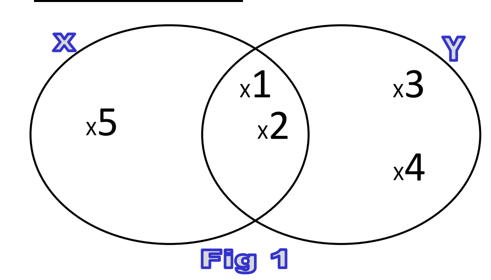
$A \cap (B \cap C) = (A \cap B) \cap C$ ➡

If X and Y are disjoint then

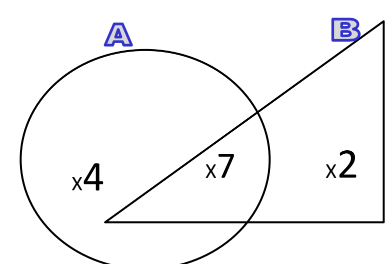
$X \cap Y = \emptyset$ ➡



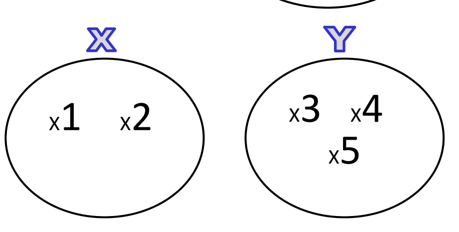
➢ **Complete:**



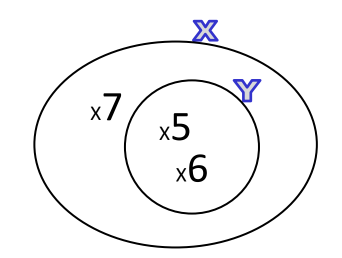
Then $X \cap Y =$ ....



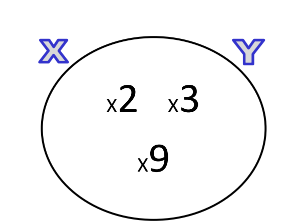
Then $A \cap B =$ ....



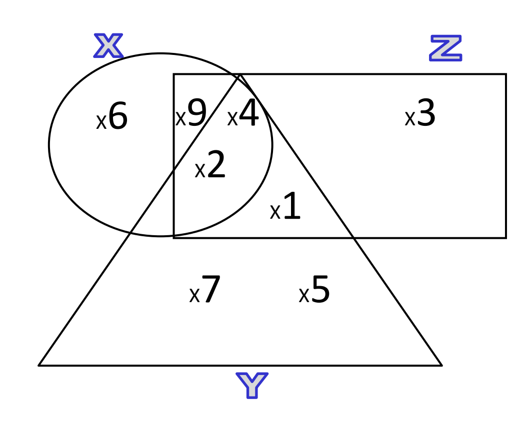
Then $Y \cap X =$ ....



Then $X \cap Y =$ ....



Then $X \cap Y =$ ....



Then $X \cap Z =$ ....

$X \cap Y =$ ....

$Z \cap Y =$ ....

$X \cap Y \cap Z =$ ....

$Y \cap X =$ ....

➢ ***Represent the sets A and B by Venn diagram. Then Find A ∩ B.***

1) A = {3 , 5 , 7} , B = {2 , 4 , 5}

2) A = {c , d , e, f} , B = {d , e , l}

3) A = {2 , 4} , B = {2 , 3 , 5, 4}

4) A = {The set of the letters of the word "Abeer"}, B= {b , l}

5) A = {1 , 2 , 3 , 5 , 9 , 7} , B = {1 , 7 , 9}

6) X = {1 , 2 , 3} , Y = {2 , 3 , 5, 6} and Z = {1 , 2 , 5}

Find (X ∩ Y ∩ Z) , (X ∩ Y) , (Y ∩ Z)

Solution:

1)	2)	3)
4)	5)	6)

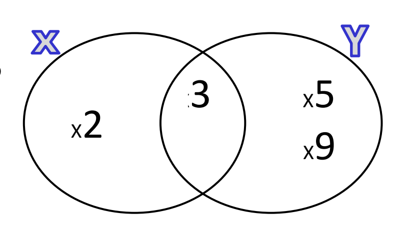
Lesson 8

Union

If A = {2 , 3} B = {5 , 9 , 3}

2 A and , 3 A , B but 5 ∈ B, 9 ∈ B

Then A ∪ B = {2 , 3 , 5, 9}

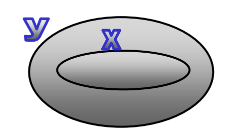


The union ∪ like happy face ☺

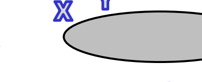
Note:

X ∪ Y = Y ∪ X

If X ⊂ Y ➡ X ∪ Y = Y ➡

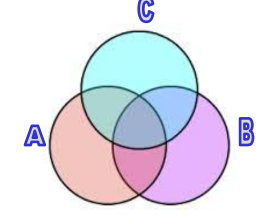


If A = B ➡ A ∪ B = A = B ➡

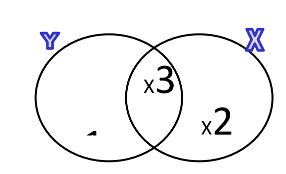


∪ A = A ∪ ∅ =

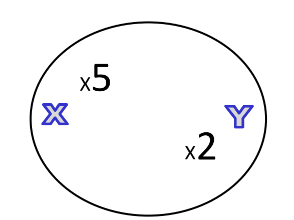
A ∪ (B ∪ C) = (A ∪ B) ∪ C ➡



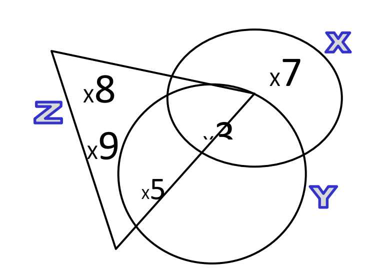
➢ **Find X ∪ Y**



....



....

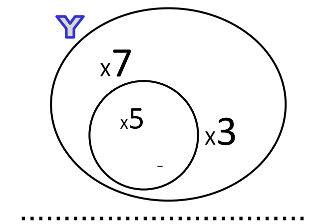




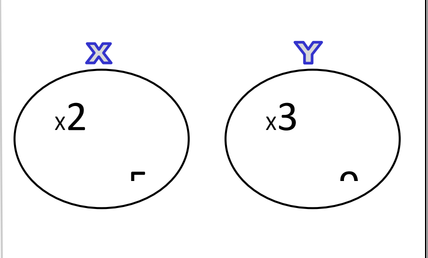
Then X ∪ Y = ...

Y ∪ Z = ...

X ∪ Y ∪ Z = ...



....



....

➢ Complete:

1) $\{7, 8\} \cup \{8, 9, 10\} =$ ……….
2) $\{7, 70\} \cup \{2, 12\} =$ ………….
3) If $Y \subset X$ then $X \cup Y =$ ………
4) $\{2\} \cup \{4\} =$ …………..
5) $\{a, b\} \cup \{b, a\} =$ …………..
6) $\{a, b, c\} \cup \{d, e, f\} =$ ………
7) $\emptyset \cap x =$ ………
8) If $X \subset Y$ then $X \cup Y =$ ………
9) $\emptyset \cup \{6, 7, 8\} =$ ………
10) $\{\ \} \cup \{5, 6\} =$ ………

➢ If X = {0 , 1 , 2 , 3} , Y = {4 , 2 , 3 , 5} Draw a Vann diagram: Then find X ∪ Y, X ∩ Y and complete by using ∈ , ∉, ⊂ , ⊄ :

1) $\{2, 5\}$ ……….. $X \cup Y$
2) $\emptyset$ …………….. $X \cup Y$
3) 3 …………….. $X \cup Y$
4) $\emptyset$ …………….. $X \cup Y$
5) $\{2, 5\}$ ……….. $X \cup Y$
6) 35 ………….. $X \cup Y$
7) $\{2\}$ ………….. $X \cup Y$
8) $\{0, 2, 3\}$ …….. $X \cup Y$
9) $\{0, 2, 3\}$ …….. $X \cup Y$

➢ Put the suitable symbol ∈ , ∉, ⊂ , ⊄ :

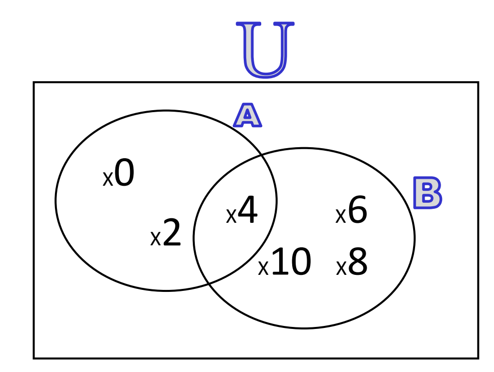
1) If $3 \in \{2, 5\} \cup \{X, 4\}$ Then $X =$ …………………
2) If $7 \in \{3, 4, 5\} \cup \{3, 5, X\}$ Then $X =$ …………..
3) If $\{2, 5\} \subset \{2, 3, 4, X, 6\}$ Then $X =$ …………….
4) If $2 \in \{2, 4, 5\} \cap \{6, X, 7\}$ Then $X =$ …………..

Lesson 9

The universal set

The universal set U is the mother set.





If A = {0 , 2 , 4} and B = {4 , 6 , 8 ,10}
The elements in A is even
And the elements is B is even

So:

The mother set is even set.

U = {0 , 2 , 4 , 6 , 8 , 10 , 12 , 14 , ...}

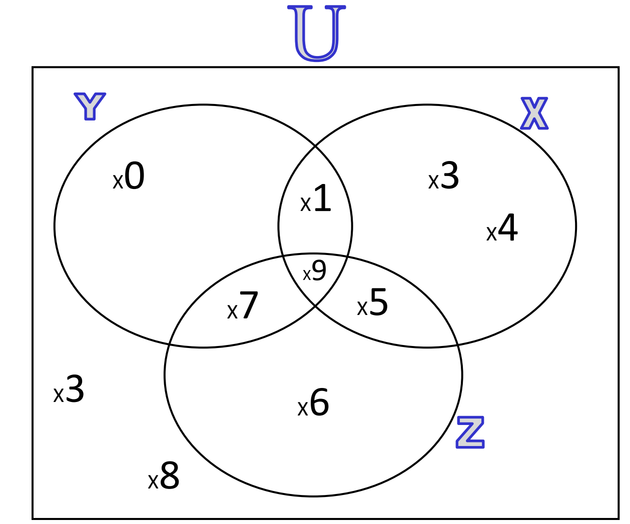
- **Complete:**

1) If X = {Saturday , Monday} and Y = {Sunday , Wednesday}

   Then U = ...

2) A = {March, April, May}, B = {Jun, Feb}. Then U = ...

- **From the opposite Venn diagram Find the following:**



U = ...
X = ...
Y = ...
Z = ...
X ∩ Y= ....
U ∩ Y= ....
X ∪ Z = ...
X ∪ Y ∪ Z = ...

Lesson 10

The complement of a set

- The complement of a set meaning: you'll complete set A to rich to the universal set.



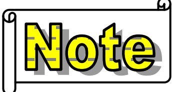
If U = {1 , 2 , 3 , 4 , 5 , 6}

A = {2 , 5}



$\grave{A}$ and called (complement of A)

$\grave{A}$ = {1 , 3 , 4 , 6}

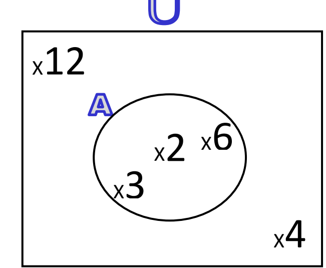


$A \cup \grave{A} = U$

$A \cup U = U$ $\qquad$ $A \cap U = A$

$A \subset U , \grave{A} \subset U , (\grave{\grave{A}}) = A$

- ***Complete:***



Then U = ……………………

A = ……………………

$\grave{A}$ =……………………..

U = …………….

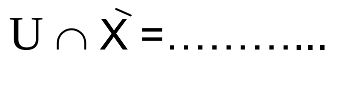
X = …………….

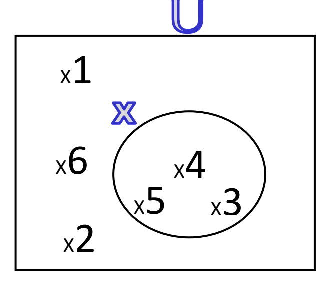
$\grave{X}$ =……………....

$X \cap \grave{X}$ =…………..

$X \cup \grave{X}$ =……………

$U \cap X$ =………...


$U \cap \grave{X}$ =………...



➢ **If U is the set of prime number less than 20 and X= {3 , 7 , 11 ,19} , Y = {2 , 3 , 5 , 7} and Z = {11 , 17 , 5 , 3} Draw Venn diagram and Find the following:**

U = ………………...

$X \cap Y$ = ………………...

$X \cup Y$ = ………………...

X' =……………....

Y' =……………....

$X' \cap Y'$ =……………....

$(X \cap Y)'$ =……………....

$X' \cup Y$ =……………....

$X' \cap X$ =……………....

$(X \cup Y)'$ =……………....

$X' \cup Y'$ =……………....

$(X' \cup Y')'$ =……………....

Lesson 11

The difference of two sets

If A = {7 ,2 , 3} B = {3 , 4 , 5}

Then A – B it's called A difference B

A: x7, x2, x3 | B: x3, x4, x5

To solve it:

1) Put your hand to cover the set after the sign of different "B"
2) Write the another elements in set A

So A – B = {7 ,2}

This meaning the elements in A and not in B

And B – A = {4 , 5}

This meaning the elements in B and not in A

Put your hand on A and write the element in B

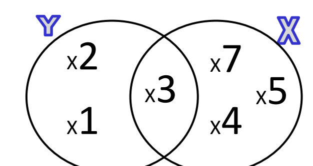
Note:

If A ∩ B =∅ Then A – B= A, B – A= B

If A ⊂ B Then A – B =

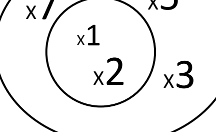
If B ⊂ A Then B – A =

➢ **Complete:**



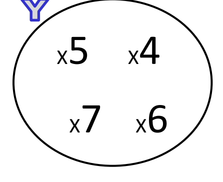
Y – X = ...

X – Y= ....



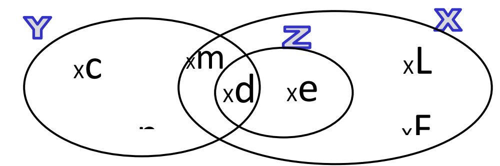
Y – X = ...

X – Y= ....



X: x3, x1, x2

Y – X = ... X – Y= ....



Y – X = ... X – Y= ....

X – Z = ... Z – Y= ....

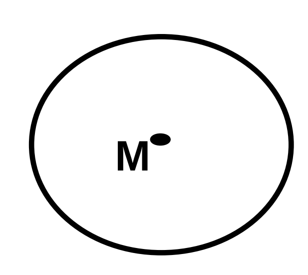
Unit (3)
Geometry

- ***Lesson 1: The Circle***
- ***Lesson 2: Drawing a triangle given the lengths of its three sides.***
- ***Lesson 3: Drawing the perpendicular line segments from the vertices of a triangle to the opposite sides of a triangle (altitudes).***

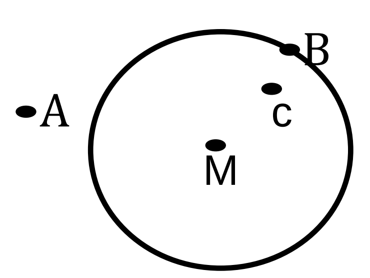


Lesson 1
The Circle

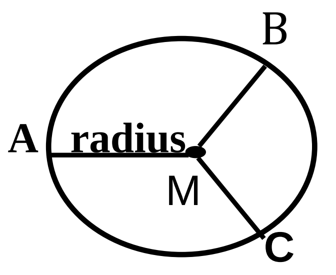
- **A circle is a shape with all points the Same distance from its center. A circle In named by its center. Thus , the circle to the right is called circle M since its Center is at point M.**

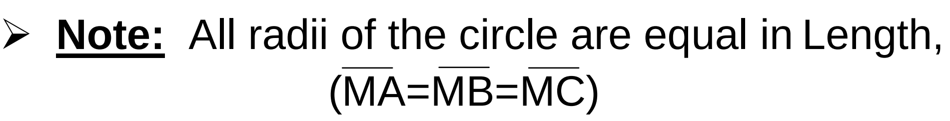


- The fixed point (M) is called the center of the circle.
- The point (A) lies outside the circle.
- The point (B) lies on the circle.
- The point (C) lies inside the circle.



- **<u>Definitions</u>**
  - Radius (r): it is the distance from the center of a circle to any point on the circle.

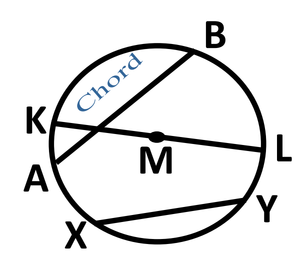




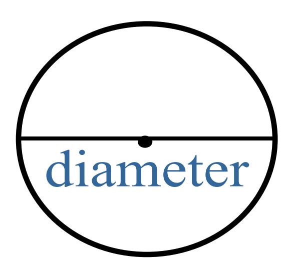
- **<u>Note:</u>** All radii of the circle are equal in Length, ($\overline{MA}=\overline{MB}=\overline{MC}$)

- **Chord:** it is a line segment joining two end points that lie on a circle.

- **<u>Notes:</u>**
  - Not all chords of a circle are equal in length
  - $\overline{AB}$, $\overline{XY}$ and $\overline{KL}$ are chords in a circle M.
  - If the chord passes through the center we call it diameter ($\overline{KL}$)



➢ **Diameter (D):** it is any line segment touches two points on the circle and passes through the center point.



➢ **Notes:**
- The diameter is the longest chord in the circle.
- The length of D=2r.

➢ **Drawing a circle:-**

1) Open compasses by the given length of radius.
2) Put the pin of the compasses a point (Center)
3) Draw the circle.

Exercise

Draw the circle M (center) with radius $\overline{MA}$ = 2 cm

---

➢ **Drawing a chord:**

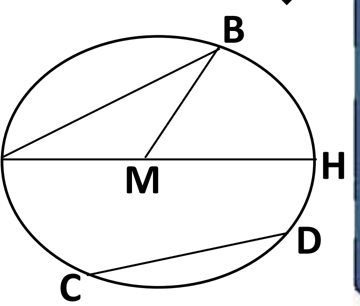
1) Open compasses by the given length of a chord.
2) Put the pin on the circle and name this point (ex: A)
3) Draw an are to cut the circle a point and name it (ex: B).
4) Join the two point (A , B) so you have the chord $\overline{AB}$

Exercise

Draw the chord $\overline{AC}$ in which $\overline{AC}$ = 3 cm

A

.M



➢ Notice that:-

1- The point in which the compass is fixed in to draw the circle is called the centre of circle (M).

2- Any line segment connecting any two points on the circle is called chord (ex: $\overline{AB}$, $\overline{CD}$).

3- Any line segment (chord) passing through the centre of the circle is called the diameter of the circle $(\overline{AH})$

((Remark: the diameter is the longest chord in the circle))

4- The lines segment $\overline{MA}$, $\overline{MB}$, $\overline{MH}$ are called the radius of the circle = r

➢ **Note:** the length of diameter of circle (d) = 2 x length of radius

$$d = 2r$$

$$\text{so } r = - d$$

EXERCISE

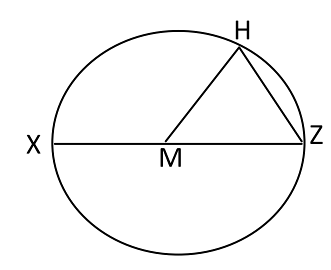
1) Draw a circle with radius 3 cm then draw the diameter $\overline{AB}$ and chord $\overline{CD}$ = 2 m

---

2) complete from the opposite figure:

a) The line segment ….. is called a chord in the circle of centre ……….

b) The line segment $\overline{XM}$ is called a …….. in the circle of centre ……..



c) The angle …….. is a central angle.

d) The line segment $\overline{XZ}$ called ……………. and its length = length of the line segment ……….

……………………………………………………………………………………….

3) Complete with the aid of the figure:

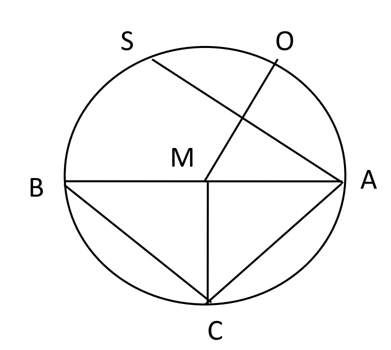
a) The line segment $\overline{AM}$ is called ……….

b) The line segment $\overline{AS}$ is called ……….

c) The line segment $\overline{AC}$ is called ……….

d) The line segment $\overline{AB}$ is called ……….

e) $\overline{MB}$ = ……….. = …………. = ……….



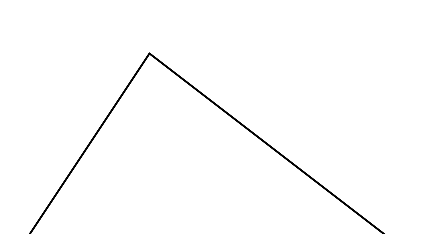
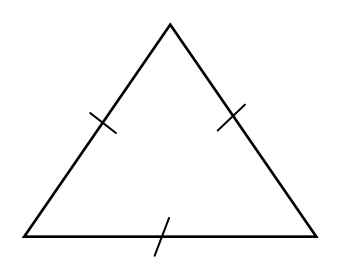
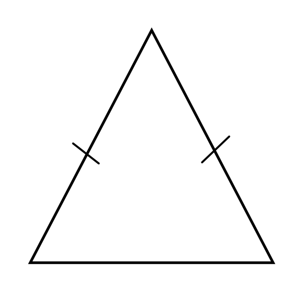
Lesson 2

Drawing a triangle

- **Remember that:-**

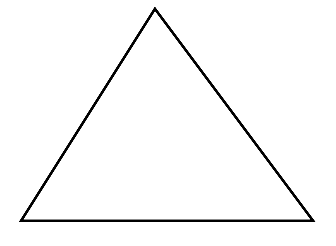
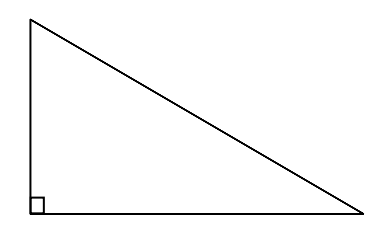
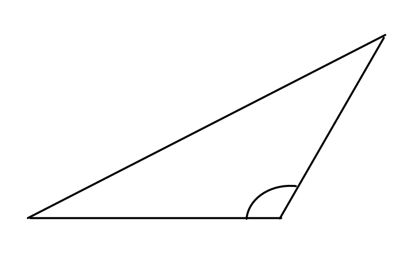
The sum of angles of a triangle = 180°

- **Types of triangles according to length of sides:**

Scalene triangle	Equilateral triangle	Isosceles triangle
		

- **Types of triangles according to measure of angles:**



Acute angled triangle	right angled triangle	obtuse angle triangle
		

A – Drawing a triangle knowing the length of two sides and measure of the included angle

S A S

➢ **Example(1):**

Draw triangle $\hat{ABC}$ such that $\overline{AB}$ = 6 cm , $\overline{BC}$ = 5 cm and measure Of < B = 50°

➢ **Solution:-**

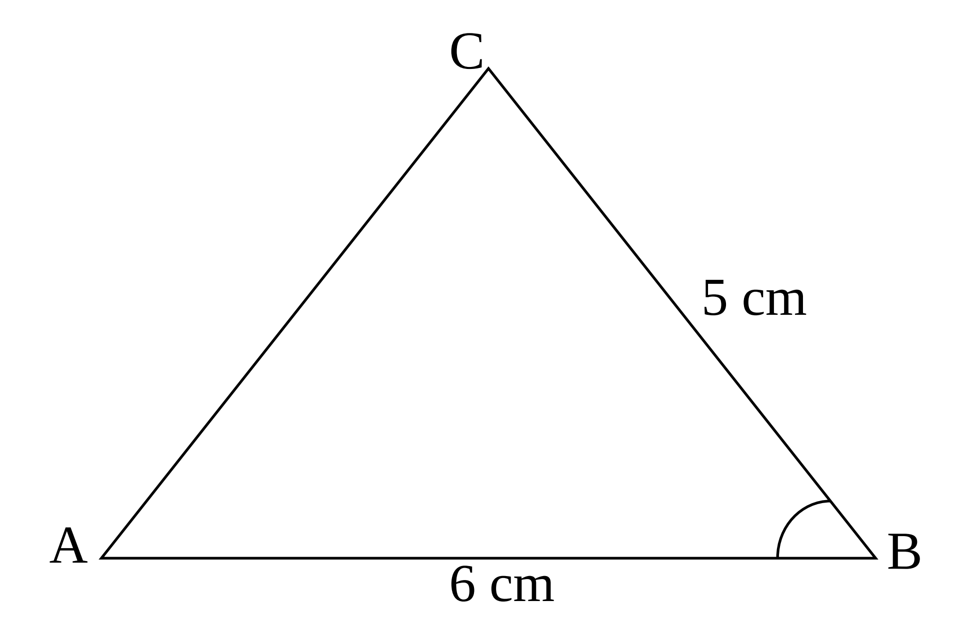
In this case we must start drawing as follows:

a) Draw $\overline{AB}$ = 6 cm

b) Using the protractor draw < ABC = 50

with vertex B such that $\overline{BC}$ = 5 cm.

c) Draw AC , so we get the required triangle.



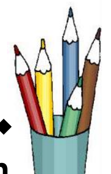
Exercise

1) Draw triangle MNH such that < N= 110° , $\overline{MN}$ = 4 cm and $\overline{NH}$ = 6 cm.

---

2) Draw triangle MNO such that $\overline{MN}$ = $\overline{NO}$ = 7 cm , and measure of angle

N = 90°, Find < M ,< H then state the type of triangle according to the measure of its angle.



B – Drawing a triangle knowing the measure of two angles and length of the side

SAA

- **Example(1):**

Draw triangle ABC such that $\overline{AB}$ = 6 cm ,<A = 50° , < B = 75°

- **Solution:-**

to draw a triangle knowing the measure of two angles and the length of a side we follow the following steps:

a) Draw $\overline{AB}$ = 6 cm

b) Use a protractor to draw

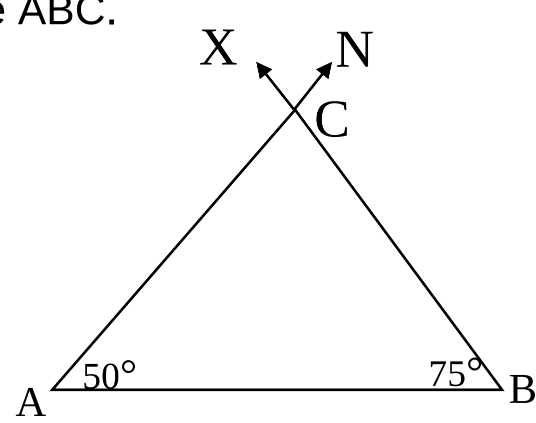
< A = 50 then draw the ray $\overrightarrow{AN}$

c) Use a protractor again to draw

< B= 75 then draw the ray $\overrightarrow{BX}$

d) The two rays meet in a point we call it C,

so we reached the required triangle ABC.



Exercise

1) Draw triangle ABC such that < B = 60° ,< A = 80° and AB = 8 cm.

2) Draw the right angle triangle XYZ such that $\overline{XY}$ = 6 cm ,< X = 60 ° , then state the type of triangle according to length of its sides.

C – Drawing a triangle knowing the measure of the three sides

S S S

- **Example(1):**

Draw triangle ABC such that $\overline{AB}$ = 4cm , BC = 5cm , Ac = 6 cm

- **Solution:-**

a) Draw $\overline{AB}$ = With ruler AB = 4 cm

b) to draw BC open the compasses 5 cm and put the compasses at B

and draw arc

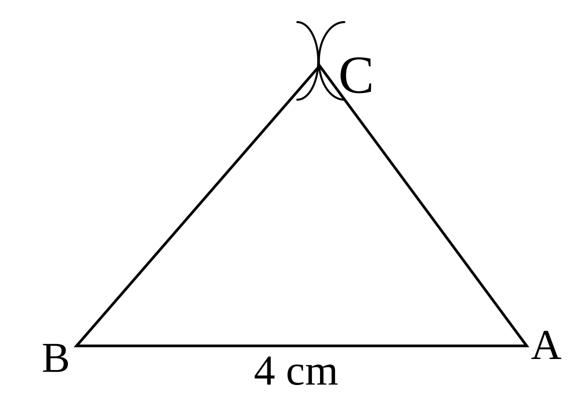
c) to draw AC open the compasses 6 cm and put the compasses at A

and draw arc to meet

The other arc

The point of meeting

Two are is C



Exercise

1) Draw the triangle ABC in which AB = 3 cm, BC = 4cm, AC = 5cm

   What is the type of this triangle according to its angles and sides?

2) Draw the equilateral triangle ABC.
   Whose side is equal 4cm, then draw a circle whose center is A and radius is equal to 4cm?

3) Draw the triangle ABC in which AB = 4 cm, BC = 6cm, CA = 8cm
Then draw a circle whose center is B and its radius is equal to 4 cm then Complete the following:
- The point A is located ……………. The circle.
- The point C is located ……………. The circle.
- The ………….. is called the radius of the circle.

4) Draw a circle of a radius 2.5 cm and draw AB as its diameter then complete drawing the equilateral triangle ABC then Choose:
- The point C is located ………… (in side – out side – on)
- $\overline{AC}$ is …………….. (a chord – a radiuses – some thing else)

Lesson 3

Drawing the (altitudes)

➢ **First:** Are you remember how to draw a perpendicular line to straight line from a point out side it

We will use a ruler and a right angle of the set square.

➢ **Ex. 1:** Draw $\overline{CD} \perp \overline{AB}$

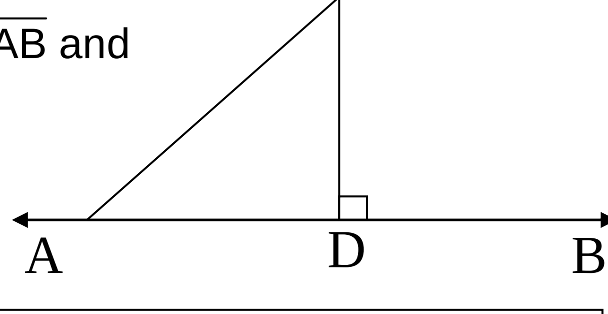
➢ **Solution:**

A B

A) Draw the line $\overline{AB}$ by ruler.

B) Put the edge of one side of the right angle of the set square on the ruler as shown in the opposite figure.

C) Draw line from C to the line $\overline{AB}$ and intersect $\overline{AB}$ at D



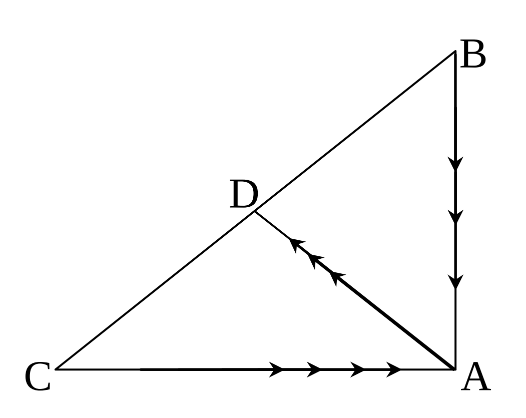
Draw MD ⊥ AB	LM ⊥ NZ
M A B	N Z M

The altitude of a triangle

➢ **The altitudes is:**

The perpendicular line from the vertical to the corresponding side.

➢ **The right angled triangle:**



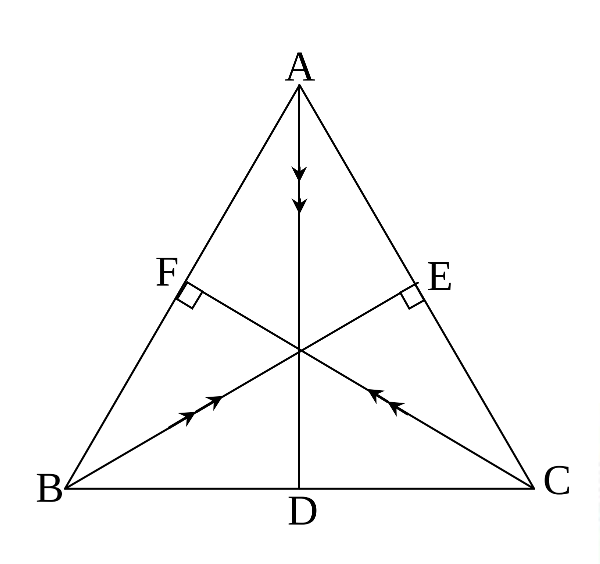
the altitudes is $\overline{AB}$, $\overline{AC}$, $\overline{AD}$

$\overline{AB} \perp \overline{AC}$, $\overline{AC} \perp \overline{AB}$, $\overline{AD} \perp \overline{BC}$

The point of intersect the altitude is

On the triangle

➢ **The a cute – angled triangle:**



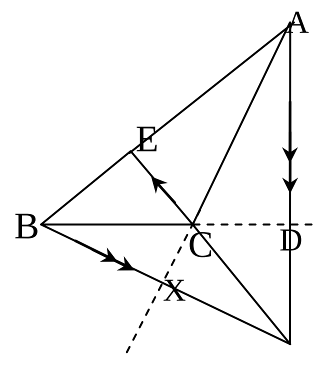
the altitudes is $\overline{AD}$, $\overline{CF}$, $\overline{BE}$

$\overline{AD} \perp \overline{CB}$, $\overline{CF} \perp \overline{AB}$, $\overline{BE} \perp \overline{CA}$

The point of intersect of the altitudes is

is **inside** the triangle

➢ **The abtuse – angled triangle:**



the altitudes is $\overline{AD}$, $\overline{CE}$, $\overline{BX}$

The point of intersect of the altitudes is

is **outside** the triangle

Exercise

1) Draw the triangle ABC in which AB = 5cm, BC = 6cm, m(<B) = 120° then draw the altitudes of this triangle and find the point of intersection?

2) Draw The triangle XYZ in which XU = 3cm , YZ = 5 cm , ZX = 7 cm Determine the type of the triangle according to the measures of its angles.
Then draw the perpendicular line from $\overline{XL}$ to $\overline{YZ}$ and measure its length and find the measure of angle XLY

3) Draw the triangle ABC in which AB = 7cm, BC = CA = 6cm , then draw the line segment from point C that is perpendicular to $\overline{AB}$ and find its length.

4) Draw the triangle ABC in which BC = 6 cm and AB = 8 cm AC = 10 cm Then draw perpendicular segments from their vertices to their three sides.

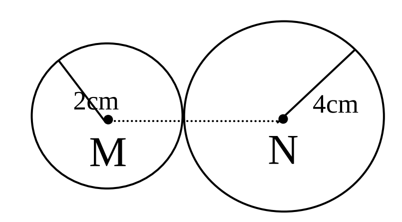
5) Draw a circle whose center is M and radius 4cm then draw two radii MX, MY and the included angle between them measures 60° then draw $\overline{XY}$ and find the length $\overline{XY}$.

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6) Draw a circle whose center is M and radius is 2.5 cm then draw two its diameter $\overline{AB}$ and draw its chord $\overline{AC}$ of length 3 cm. Draw $\overline{BC}$ then Find its length.

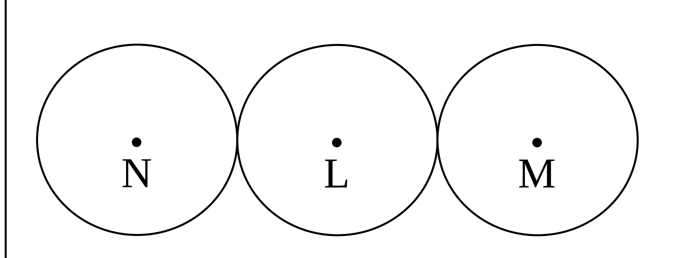
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7) In the opposite figure:
Find the length of MN



The Diameter of N = 8cm
The Diameter of M = 4cm

Then MN = ……………………...
……………………………………
……………………………………



The radius of M = 4 cm
The radius of L = 6 cm
The radius of N = 2 cm
Then MN = ……………………...
……………………………………
……………………………………

Unit (4)
Probability

- ***Lesson 1: Experimental probability***
- ***Lesson 2:Theoretical probability***

Lesson 1

Experimental probability

➢ **Example:**

The opposite table shows the result of a survey of asking 40 students about their favorite breakfast.

What is the probability of choosing foul and tamaya?

What is the probability of choosing pies?

What is the probability of choosing cheese and dessert?

Breakfast	
Foul and tamayia	20
Pie	4
Cheese and dessert	16

If the number of student is 400 students. How can you predict about the number of students choosing foul and tamaya?

Note:

The probability of the event = ―――――――

The number of times of event occurs = the probability X total number

Solution

The probability of choosing foul and tamaya = ...

....

....

Then ➡ The prediction about the number of students

Choosing foul and tamaya = ...

Choosing pie = ...

Choosing cheese and desert = ...

Exercise

1) Electric lamps manufacturing company keeps track of 1000 lamps of its production to know the maximum working hours before tearing down. The following table lists these data:

Maximum working hours	Less than 150 h	150 – 400 h	400 – 100 h	More than 1000 h
Number of lamps	80	250	350	320

If bought a lamp at this company, what is the probability to tear down?

A) Before 150 working hours. B) After 400 working hours.

....

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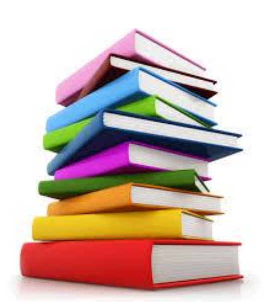
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2) A Survey was applied to ask 10 students about the foreign languages they prefer to study 5 students prefer English, 3 students prefer French and 2 students prefer Germane. If the total number of students in the school is 600 students. How many students are predicated to prefer studying German?



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Lesson 2

Theoretical probability

➢ **The sample space:**

It is the set of all possible outcomes events.

➢ **Ex:** In a experiment of:

1) Tossing a regular coin only.

The outcomes are head or tail

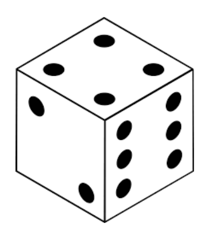
So the simple space "S" = {H , T}



2) Rolling a fair die once.

The outcomes are 1 , 2 , 3 , 4 , 5 , 6

So the simple space "S" = {1 , 2 , 3 , 4 , 5 , 6}



3) Determining the result of a team in football match

The outcomes are win, draw , lose

So "S" = {win , draw , lose}



4) Determining the gender of the newborn baby.

The outcomes are boy or girl

So "S" = {B , G}




Exercise

1) Complete:

a) The probability of an event is a always ……………. or …………
Or a number between ……………. and …………………

b) An impossible event has a probability of ……………..

c) A certain event has a probability of ……………………

d) What is the probability of March having 32 days?
....

e) What is the probability of April having 30 days?
....

f) The sample space of tossing coin is ………………… and the sample space of rolling a die ……………………..

Note:

The probability of a certain event = 1

The probability of an impossible event = 0

The probability of any event between 0 and 1

The probability of non-occurrence of an event
= 1 – the probability of event

2) A jar contains 5 green, 8 yellow and 7 red marbles if you pick one without looking what is the probability of green and yellow and not red

The sample space = { ....}

....
....
....
....

3) In the opposite figure: the spinner is divided into 5 coloured section. What is the probability that the spinner stops at?

a) red 2) orang 3) black 4) not green

Red
Orange
Green
Purple
Yellow

Solution

The sample space = { ....}

....

....

....

....

4) When rolling a die once, first write the sample space, second what is the probability of having:

a) A prime number? b) A prime even number?

c) An odd number? d) A number divisible by 3?

e) A number less than one? f) A number less than 5?

g) Predict how many times a number divisible by 3 will appear on the top face if the die was thrown 240 times?

Solution

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